HACR NJ, 21-PHIL,

## HISTORIC AMERICAN ENGINEERING RECORD

## INDEX TO PHOTOGRAPHS

Morris Canal Warren, Sussex, Morris, Passaic, Essex and Hudson Counties New Jersey HAER No. NJ-29

All photographs in this file are historic views of the Morris Canal. The exact dates of these photographs are unknown but it can be assumed that they were taken during the late 19th and early 20th century. They were made available by the members of the Canal Society of New Jersey and were photocopied by Jack E. Boucher in 1971.

NJ-29-1	CANAL BOAT	OF 96	TONS	PASSING	OUT	OF	LOCK	INTO
	THE DELAWA	RE RIV	ER.					

NJ-29-2	CANAL BOAT ENTERING THE DELAWARE CANAL FROM THE
	CONFLUENCE OF THE LEHIGH RIVER. BOATS COULD BE
	FERRIED ACROSS THE DELAWARE RIVER TO THE MORRIS
	CANAL BY A CABLE SUPPORTED TROLLEY.

NJ-29-3	INCLINED PLANE 11 WEST. POWER HOUSE (LEFT) AND
	CRADLE (RIGHT) ARE VISIBLE IN FOREGROUND.
	ENTRANCE PORTAL TO DELAWARE RIVER VISIBLE IN
	BACKGROUND.

NJ-29-4	POWER	HOUSE	OF	INCLINED	PLANE	11	WEST.

NJ-29-5	POWER	HOUSE	AΤ	INCLINED	PLANE	11	WEST.

NJ 29-6	CONSTRUCTION	OF	COAL	CHUTES	BY	THE	LEHICH	VALLEY
_	RAILROAD ON T	THE	MORRI	IS CANAI	A.	r POI	RI DELAV	VARE.

NJ-29-7	CANAL BOATS ON THE MORRIS CANAL AT PORT
	DELAWARE. NOTE THAT THE BOATS ARE EMPTY AND
	RIDING HIGH IN THE WATER

NJ-29-8 TOLL COLLECTOR'S HOUSE AT THE NORTH END OF PORT DELAWARE VICINITY. NJ-29-9 COOPER'S FURNACE, PHILLIPSBURG VICINITY. ONE OF MANY INDUSTRIAL SITES ESTABLISHED ALONG THE CANAL ROUTE COOPER'S FURNACE, PHILLIPSBURG VICINITY. CANAL NJ-29-10IS VISIBLE IN TOP OF PHOTOGRAPH. NJ-29-11 LOCK 9 WEST, GREEN'S BRIDGE VICINITY. LOCK 8 WEST. LOCK TENDER'S HOUSE IS VISIBLE IN NJ-29-12 CENTER OF PHOTOGRAPH. INCLINED PLANE 9 WEST. PARTIALLY SUBMERGED NJ-29-13 CRADLE IS VISIBLE IN FOREGROUND. POWER HOUSE IS VISIBLE AT TOP OF HILL. NJ-29-14 INCLINED PLANE 9 WEST. POWER HOUSE IS VISIBLE IN CENTER OF PICTURE. PLANE 9 WAS THE LONGEST PLANE OF THE CANAL SYSTEM. IT IS ALSO ONE OF ONLY THREE DOUBLE TRACKED PLANES (ALLOWING BOATS TO ASCEND AND DESCEND SIMULTANEOUSLY) ON THE CANAL. NJ-29-15 MORRIS CANAL IN THE VICINITY OF BROADWAY, NEW JERSEY. NJ-29-16 LOOKING DOWN INCLINED PLANE 7 WEST. FLUME THAT CARRIES WATER TO PENSTOCK IS VISIBLE AT RIGHT. WATER POWER WAS USED TO OPERATE LIFTING MACHINERY.

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NJ-29-48	SUMMIT OF THE MORRIS CANAL, 914 FEET ABOVE MEAN HIGH TIDE AT NEWARK, NEW JERSEY. TRACKS OF THE D, L & W RAILROAD CAN BE SEEN AT LEFT. EDGE OF THE LAKE HOPATCONG STATION IS ALSO VISIBLE AT LEFT. PASSENGERS AND FREIGHT COULD BE TRANSFERRED TO SMALL BOATS FOR TRANSPORT THROUGH THE FEEDER CANAL TO LAKE HOPATCONG.
NJ-29-49	FEEDER LOCK OR "BROOKLYN" LOCK TO LAKE HOPATCONG. THE NAME BROOKLYN COMES FROM THE NEAR BY BROOKLYN FORGE (AN IRON WORKS). THIS LOCK CONNECTS DIRECTLY WITH LAKE HOPATCONG.

NJ-29-50	BOAT GOING THROUGH FEEDER LOCK FROM LAKE HOPATCONG. A BYPASS FLUME (LEFT OF LOCK) ALLOWED A CONTINUOUS FLOW OF WATER INTO THE FEEDER WHILE THE LOCK WAS IN USE TO MAINTAIN THE LEVEL OF THE MORRIS CANAL.
NJ-29-51	LOOKING THROUGH STOP GATE TOWARD FEEDER LOCK. STOP GATE COULD BE CLOSED TO ALLOW DRAINAGE OF LOCK AND FEEDER CANAL FOR REPAIRS.
NJ-29-52	FEEDER LOCK AT A LATER DATE SHOWING ABANDONMENT. LOCK WALLS ARE SHORED WITH TIMBER AND LOCK GATE IS CLOSED.
NJ-29-53	CANAL VIADUCT, LEDGEWOOD VICINITY.
NJ-29-54	HEAD OF PLANE 2 EAST.
NJ-29-55	LOOKING EAST FROM HEAD OF PLANE 2 EAST. POWER HOUSE AND FLUME VISIBLE TO RIGHT, TAILRACE RUNNING THROUGH CENTER OF PHOTOGRAPH. CRADLE TO INCLINED PLANE 3 EAST IS VISIBLE IN BACKGROUND TO LEFT.
NJ-29-56	LOOKING DOWN TAILRACE TO PLANE 2 EAST. CABLE OF INCLINED PLANE VISIBLE ON RIGHT.
NJ-29-57	LOOKING UP TAILRACE OF PLANE 2 EAST. WATER DISCHARGING FROM CULVERT ON LEFT HAD JUST PASSED THROUGH THE FLUME AND POWER HOUSE IN ORDER TO OPERATE THE LIFT MACHINERY. TAILRACE ON RIGHT IS A BYPASS FLUME SO THAT LEVEL OF CANAL BELOW PLANE 2 EAST CAN BE MAINTAINED.
NJ-29-58	LOOKING UP AT PLANE 2 EAST. LIFTING CABLE AND

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NJ-29-59	PLANE 2 EAST.
NJ-29-60	APPROACHING LOCK 1 EAST. LOCK TENDER'S HOUSE IS ON LEFT.
NJ-29-61	CANAL BOAT IN LOCK 1 EAST. MULE TEAM USED FOR TOWING IS ON TOWPATH ON LEFT SIDE OF LOCK.
NJ-29 <b>-</b> 62	BOAT HEADING WEST ASCENDING PLANE 4 EAST. FLUME AND POWER HOUSE ON RIGHT. A WARREN TRUSS BRIDGE IS VISIBLE IN THE BACKGROUND.
NJ <b>-</b> 29-63	CANAL BOAT IN CRADLE AT TOP OF PLANE. TO PASS OVER THE SUMMIT (THE HUMP OF LAND AT THE TOP OF THE PLANE TO HOLD BACK THE WATER AT THAT LEVEL), THE BOATS HAVE BEEN HINGED AND TWO CRADLES ARE USED TO CARRY THE BOAT UP THE PLANE.
NJ-29-64	WATER SPILLING FROM FLUME. POWER HOUSE IS VISIBLE IN UPPER LEFT HAND SIDE OF PHOTOGRAPH.
NJ-29-65	LOCK 2 EAST, APPROXIMATELY HALF WAY BETWEEN PLANE 4 EAST AND WHARTON, NEW JERSEY.
NJ-29-66	"CANAL BOAT ENROUTE NEAR HACKETTSTOWN" READS THE PHOTOGRAPH'S CAPTION. BOAT IS QUITE POSSIBLY APPROACHING LOCK 2 EAST FROM THE EAST DUE TO SIMILARITIES BETWEEN THIS AND THE PREVIOUS PHOTOGRAPH (I.E. TREES BORDERING THE LOCK AND THE CANAL TENDER'S HOUSE THAT IS VISIBLE TO RIGHT IN THIS PHOTOGRAPH).
NJ-29-67	CANAL TENDER'S HOUSE AT LOCK 2 EAST. DUE TO DETERIORATION OF THE BUILDINGS WALLS AND

FOUNDATION, CABLES FROM AN INCLINED PLANE WERE WRAPPED AROUND THE HOUSE AND FASTENED TO PLANE RAILS PLACED ON OPPOSITE ENDS OF THE STRUCTURE.

NJ-29-68	CANAL PLANE 5 EAST. CANAL BED IS VISIBLE WHILE FOOT OF CANAL IS UNDERGOING MAINTAINANCE. NOTE HOW LARGE AMOUNTS OF DIRT ARE HAULED FROM PLACE TO PLACE USING A CANAL BOAT AND CRADLE.
NJ-29-69	CANAL IN THE VICINITY OF DOVER SHOWING THE PETER'S OVERALL FACTORY.
NJ-29-70	GENERAL VIEW OF CANAL IN DOVER LOOKING EAST. WHAT APPEARS TO BE A SWING BRIDGE IS VISIBLE ACROSS CANAL ON RIGHT SIDE OF PHOTOGRAPH (NOTE THAT THIS MAY ALSO BE A LIFT BRIDGE WITH THE LIFT EQUIPMENT REMOVED).
NJ-29-71	GENERAL VIEW OF THE MORRIS CANAL IN THE VICINITY OF ROCKAWAY, NEW JERSEY.
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NJ-29-76	CANAL BARGE WAITING TO ENTER LOCK 9 EAST. CANAL GATE MECHANISM IS VISIBLE ON LEFT SIDE OF PHOTOGRAPH.
NJ-29-77	CANAL BOAT 769 (NUMBER MEANS IT WAS OWNED BY THE CANAL COMPANY). BOATS HAD ONLY SIX INCHES TO SPARE ONCE THEY WERE IN THE LOCK.

NJ-29-78	APPROACHING LOCK 10 EAST.
NJ-29-79	BRIDGE AT POWERVILLE BASIN. LOCK 10 EAST IS VISIBLE TO LEFT.
NJ-29-80	POWERVILLE BASIN. LOCK TEN EAST IS VISIBLE TO LEFT AT FAR END OF BRIDGE.
NJ-29-81	LOCK 11 EAST. THIS LOCK IS A GUARD LOCK FOR POWERVILLE BASIN. ITS PURPOSE IS TO MAINTAIN THE WATER LEVEL OF THE BASIN.
NJ-29-82	CANAL WEST OF LOCK 12 EAST NEAR BOONTON. STORAGE BUILDING AND CHUTE ON LEFT SIDE OF CANAL MAY BE A COAL FACILITY. COAL WOULD BE UNLOADED FROM THE BOAT AND PASSED UP THE CHUTE INTO THE COAL STORAGE BIN. COAL COULD THEN BE LOADED INTO WAGONS FROM THE BOTTOM OF THE BIN ON THE OPPOSITE SIDE OF THE STRUCTURE WHEN NECESSARY.
NJ-29-83	CANAL WEST OF BOONTON.
NJ-29-84	SUMMIT OF PLANE 7 EAST. ROOFTOPS OF BOONTON ARE VISIBLE ON RIGHT SIDE OF PHOTOGRAPH.
NJ-29-85	INCLINED PLANE 7 EAST. FLUME AND STONE POWER HOUSE ARE ON RIGHT SIDE OF PHOTOGRAPH. NOTE THE CABLE LEAVING THE POWER HOUSE. THIS CABLE IS ATTATCHED TO A DRUM ON THE INSIDE THE POWER HOUSE WHICH IS TURNED BY MEANS OF A WATER POWERED TURBINE.
NJ-29 <del>-8</del> 6	PLANE 7 EAST. CRADLE IN FOREGROUND.
<b>NJ-</b> 29 <b>-8</b> 7	CANAL TENDER AT PLANE 7 EAST.

NJ-29-88	CANAL EAST OF BOONTON. LOCK 13 EAST IN BACKGROUND.
NJ-29-89	LOCK 13 EAST. WOODEN TIMBERS (FOREGROUND LEFT AND RIGHT OF LOCK ENTRANCE) ARE BEING USED AS BUMPERS TO HELP GUIDE SHIP INTO LOCK WHILE AVOIDING CONTACT WITH WALLS.
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NJ-29-92	GENERAL VIEW ALONG CANAL SHOWING MODIFIED QUEEN POST BRIDGE IN BACKGROUND.
NJ-29-93	UNLOADING AREA ALONG CANAL IN THE VICINITY OF BOONTON. GIN POLES (BOOMS) USED IN UNLOADING LIE TO LEFT AND RIGHT OF CENTER.
NJ-29-94	CANAL EAST OF BOONION.
NJ-29-95	LOOKING EAST TOWARD MONTVILLE, NEW JERSEY FROM THE HEAD OF PLANE 8 EAST. FLUME IS ON LEFT SIDE OF PHOTOGRAPH, POWER HOUSE IS AT CENTER. THE PLANE CABLE RUNS ALONG RECESSED PULLEYS (VISIBLE IN LOWER LEFT HAND CORNER) IN ORDER TO CREATE A SMOOTH AND UNOBSTRUCTED PATH.
NJ-29-96	PLANE 8 EAST. TRACK IS ON RIGHT, TAILRACE IS ON LEFT. ABOVE TAILRACE CAN BE SEEN THE RETURN PATH OF THE CABLE. IN BACKGROUND CAN BE SEEN THE PARTIALLY SUBMERGED CRADLE AT THE HEAD OF PLANE 9 EAST.

LOOKING DOWN PLANE 9 EAST AT MONTVILLE. A BOAT IN ITS CRADLE IS VISIBLE BELOW THE BRIDGE AT THE

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NJ-29-98	LOOKING UP PLANE 9 EAST. POWER HOUSE VISIBLE TO LEFT OF CENTER AT THE TOP OF THE PLANE.
NJ-29-99	GENERAL VIEW OF THE CANAL IN THE VICINITY OF MONTVILLE.
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NJ-29-107	POMPTON RIVER AQUEDUCT

NJ-29-108	POMPTON RIVER AQUEDUCT.
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NJ-29-112	CANAL FAST OF THE POMPTON IRON WORKS, LITTLE FALLS IS VISIBLE IN THE DISTANCE.
NJ-29-113	INSIDE THE LITTLE FALLS AQUEDUCT, SPANNING THE PASSAIC RIVER. THE AQUEDUCT WAS CONSTRUCTED OF STONE. THE WOODEN FRAMEWORK VISIBLE IN THE PICTURE WAS ADDED TO SHORE UP THE DETERIORATING STONE WORK OF THE ORIGINAL AQUEDUCT.
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NJ-29-117	FOOT OF PLANE 11 EAST. POWER HOUSE IS LEFT OF CENTER IN PHOTOGRAPH. BOAT IN PHOTOGRAPH IS ASCENDING THE PLANE TRAVELLING WEST.
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NJ-29-149	LIFT BRIDGE IN JERSEY CITY.
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NJ-29-155	VIEW OF THE HUDSON RIVER BASIN (C.1828) WITH LOCK 22 EAST (TIDEWATER LOCK) IN CENTER FOREGROUND. CITY OF NEW YORK CAN BE SEEN IN BACKGROUND.
NJ-29-156	CANAL INSPECTION PARTY, JULY 1, 1913. TAKEN IN THE VICINITY OF THE HUDSON RIVER BASIN.
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NJ-29-158	VIEW OF THE HUDSON RIVER BASIN WITH HUDSON RIVER AND NEW YORK CITY IN THE BACKGROUND.
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NJ-29-171	GENERAL VIEW OF LOCK ON THE MORRIS CANAL SHOWING GATES AND THE MACHINERY THAT OPENS AND CLOSES THEM.
NJ-29-172	VIEW OF CANAL BOAT LEAVING LOCK.
NJ-29-173	CANAL TENDER OPERATING LOCK MACHINERY ON THE MORRIS CANAL. AS THE LOCK TENDER TURNS THE CRANK, A SMALL COGGED WHEEL (PINION) ON THE CRANK SHAFT TURNS A LARGER COGGED WHEEL (MAIN GEAR). THE MAIN GEAR ENGAGES A COGGED BAR CALLED A TRAVELLER WHICH MOVES FORWARD OR BACK DEPENDING ON WHICH WAY THE CRANK IS TURNED. CONNECTED TO THE TRAVELLER ARE TO LONG RODS (GATE ARMS) WHICH IN TURN ARE CONNECTED TO THE GATE'S TOP BEAM (ONE ARM FOR EACH GATE). AS THE TRAVELLER MOVES FORWARD THE GATE ARMS EXTEND PUSHING THE GATES

OPEN.